

IN THE CLAIMS:

Please amend the claims as follows:

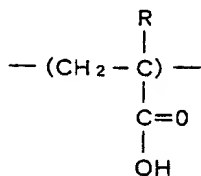
1-54. (Cancelled)

55. (Previously Presented) A highly stable polymer comprising a polymer obtainable by reacting a polymer having a principal chain including at least a component unit having an acidic group and a component unit having a hydroxyl group with an isocyanate compound until the isocyanate compound, as measured by an IR absorption spectrum at a peak of $2,200\text{ cm}^{-1}$, is no longer present, and then adding an alcohol.

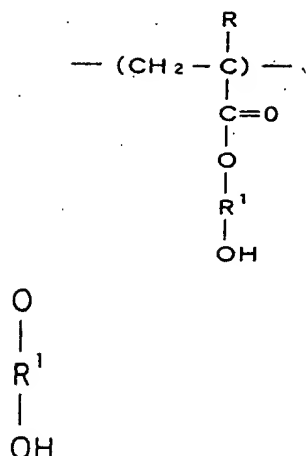
56. (Cancelled)

57. (Previously Presented) The highly stable polymer according to claim 55, wherein the principal chain comprises at least a component unit represented by the below-mentioned formula (1) and a component unit represented by the below-mentioned formula (2):

Formula (1)



Formula (2)



wherein R is hydrogen or an alkyl group having 1 to 5 carbon atoms, and R¹ is an alkylene group having 2 to 4 carbon atoms.

58. (Previously Presented) The highly stable polymer according to claim 55, wherein the isocyanate compound has a reactive group other than the isocyanate group.

59. (Previously Presented) The highly stable polymer according to claim 58, wherein the isocyanate group is a radical polymerizable group-containing isocyanate compound.

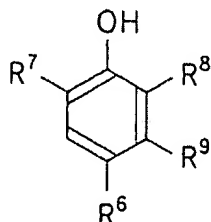
60. (Previously Presented) The highly stable polymer according to claim 55, wherein the principal chain part of the highly stable resin is formed by polymerization of a compound having a double bond-containing group and an acidic functional group with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator.

61. (Previously Presented) The highly stable polymer according to claim 60, wherein the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm is 60% or more.

62. (Previously Presented) The highly stable polymer according to claim 60, wherein the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm is 50% or more.

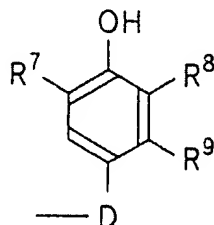
63. (Previously Presented) The highly stable polymer according to claim 55, wherein the isocyanate compound is introduced in the principal chain part of the highly stable resin, using a polymerization inhibitor selected from the group consisting of a phenol-based compound represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



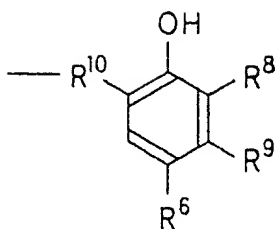
wherein R⁶ is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

Formula (11)



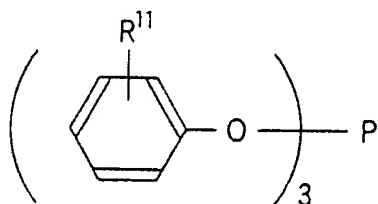
wherein D in the formula (11) is -S-, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R⁷ is hydrogen or an alkyl group having 1 to 10 carbon atoms, R⁸ is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below-mentioned formula (12):

Formula (12)



wherein R^{10} in the formula (12) is an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^9 is hydrogen or an alkyl group having 1 to 10 carbon atoms however, at least one of R^7 and R^8 is a tert-butyl group, or an alkyl group having a cyclohexyl group, and substituents of the same numeral can either be same or different,

Formula (16)



wherein R^{11} is hydrogen or an alkyl group having 1 to 20 carbon atoms.

64. (Previously Presented) The highly stable polymer according to claim 63, wherein the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm is 60% or more.

65. (Previously Presented) The highly stable polymer according to claim 63, wherein the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm is 50% or more.

66. (Previously Presented) A production method comprising the steps of reacting a polymer having a principal chain including at least a component unit having an acidic group and a component unit having a hydroxyl group with an isocyanate compound until the isocyanate compound, as measured by an IR absorption spectrum at a peak of $2,200\text{ cm}^{-1}$, is no longer present, and then adding an alcohol.

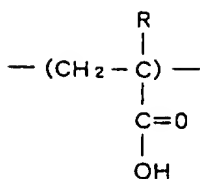
67. (Previously Presented) The production method for a highly stable polymer according to claim 66, wherein the alcohol is added to the solution of the polymer obtained by reacting the material polymer and the isocyanate compound dissolved or dispersed in a solvent before viscosity rise of the solution or before completion of viscosity rise of the solution.

68. (Previously Presented) The production method for a highly stable polymer according to claim 67, wherein the polymer applied with the alcohol treatment are left or heated for a predetermined time for maturation after the addition of the alcohol.

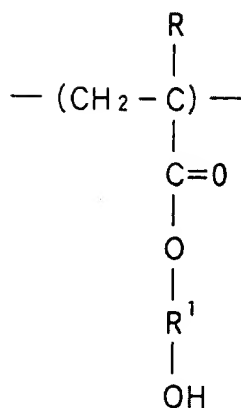
69. (Previously Presented) The production method for a highly stable polymer according to claim 68, wherein the polymer is matured at 30 to 170 °C for a period within 72 hours.

70. (Previously Presented) The production method for a highly stable polymer according to claim 66, wherein the principal chain of the material polymer comprises at least a component unit represented by the below-mentioned formula (1) and a component unit represented by the below-mentioned formula (2):

Formula (1)



Formula (2)



wherein R is hydrogen or an alkyl group having 1 to 5 carbon atoms, and R¹ is an alkylene group having 2 to 4 carbon atoms.

71. (Previously Presented) The production method for a highly stable polymer according to claim 66, wherein the isocyanate compound has a reactive group other than the isocyanate group.

72. (Previously Presented) The production method for a highly stable polymer according to claim 71, wherein the isocyanate group is a radical polymerizable group-containing isocyanate compound.

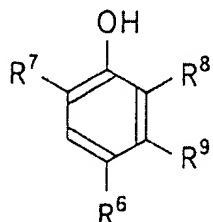
73. (Previously Presented) The production method for a highly stable polymer according to claim 66, wherein a compound having a double bond-containing group and an acidic functional group is reacted with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator so as to prepare the material polymer, and the material polymer is reacted with the isocyanate compound.

74. (Previously Presented) The production method for a highly stable polymer according to claim 73, wherein a highly stable resin with the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm being 60% or more is obtained.

75. (Previously Presented) The production method for a highly stable polymer according to claim 73, wherein a highly stable resin with the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more is obtained.

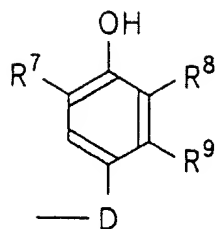
76. (Previously Presented) The production method for a highly stable polymer according to claim 66, wherein the isocyanate compound is reacted with the material polymer, using a polymerization inhibitor selected from the group consisting of a phenol-based compound represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



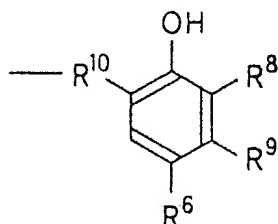
wherein R⁶ is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

Formula (11)



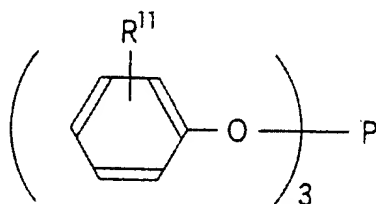
wherein D in the formula (11) is -S-, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R⁷ is hydrogen or an alkyl group having 1 to 10 carbon atoms, R⁸ is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below:

Formula (12)



wherein R¹⁰ in the formula (12) is a alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R⁹ is hydrogen or an alkyl group having 1 to 10 carbon atoms, however, at least one of R⁷ and R⁸ is a tert-butyl group, or an alkyl group having a cyclohexyl group. Moreover, substituents of the same numeral can either be same or different,

Formula (16)



wherein R¹¹ is hydrogen or an alkyl group having 1 to 20 carbon atoms.

77. (Previously Presented) The production method for a highly stable polymer according to claim 76, wherein a highly stable resin with the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm being 60% or more is obtained.

78. (Previously Presented) The production method for a highly stable polymer according to claim 76, wherein a highly stable resin with the light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more is obtained.

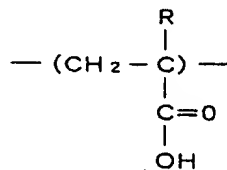
79. (Cancelled).

80. (Previously Presented) The hardenable resin composition according to claim 79, wherein the hardenable polymer is obtained by reacting the material polymer with the isocyanate compound and the alcohol, and further being left or heated for a predetermined time for maturation.

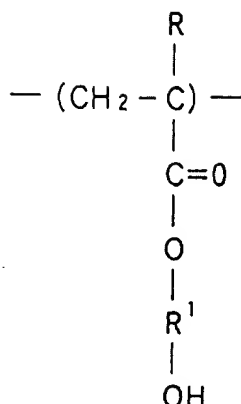
81. (Previously Presented) The hardenable resin composition according to claim 79, containing as the essential component the hardenable polymer dissolved or dispersed in a coating solvent, wherein the hardenable polymer is obtained by reacting the material polymer with the isocyanate compound, and further reacting the same with ,an alcohol having a boiling point with a 75°C or less difference with respect to the boiling point of the coating solvent to be used and/or an evaporation rate with a 90 (n-BuOAc=100) or less difference with respect to the evaporation rate of the coating solvent.

82. (Previously Presented) The hardenable resin composition according to claim 79, wherein, the principal chain of the material polymer comprises at least a component unit represented by the below-mentioned formula (1) and a component unit represented by the below mentioned formula (2) :

Formula (1)



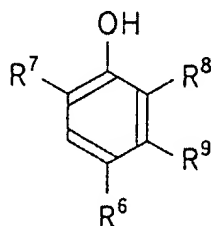
Formula (2)



wherein R is hydrogen or an alkyl group having 1 to 5 carbon atoms, and R¹ is an alkylene group having 2 to 4 carbon atoms, and
the isocyanate compound is a radical polymerizable group-containing isocyanate compound.

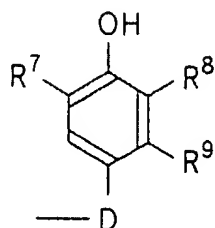
83. (Previously Presented) The hardenable resin composition according to claim 79, wherein the material polymer is formed by polymerization of a compound having a double bond-containing group and an acidic functional group with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator, and the material polymer is reacted with the isocyanate compound, using a polymerization inhibitor selected from the group consisting of a phenol-based compound represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



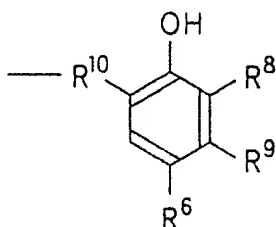
wherein R⁶ is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

Formula (11)



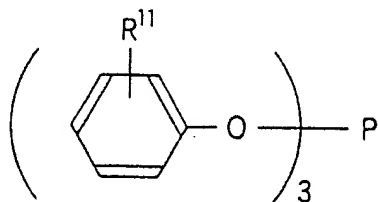
wherein D in the formula (11) is —S—, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R⁷ is hydrogen or an alkyl group having 1 to 10 carbon atoms, R⁸ is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below-mentioned formula (12):

Formula (12)



wherein R¹⁰ in the formula (12) is an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R⁹ is hydrogen or an alkyl group having 1 to 10 carbon atoms, however, at least one of R⁷ and R⁸ is a tert-butyl group, or an alkyl group having a cyclohexyl group, moreover, substituents of the same numeral can either be same or different,

Formula (16)



wherein R¹¹ is hydrogen or an alkyl group having 1 to 20 carbon atoms.

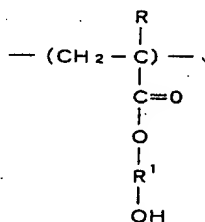
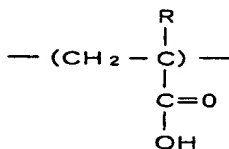
84. (Previously Presented) The hardenable resin composition according to claim 83, wherein the hardenable resin polymer has a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm being 60% or more.

85. (Previously Presented) The hardenable resin composition according to claim 83, wherein the hardenable resin polymer has a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more.

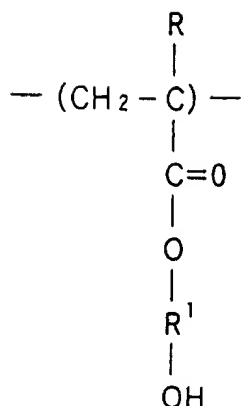
86. (Cancelled).

87. (Previously Presented) The production method for a hardenable resin composition according to claim 86, wherein the principal chain of the material polymer comprises at least a component unit represented by the below-mentioned formula (1) and a component unit represented by the below-mentioned formula (2) :

Formula (1)



Formula (2)

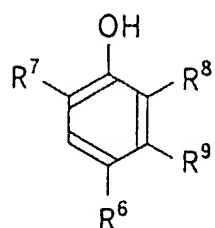


wherein R is hydrogen or an alkyl group having 1 to 5 carbon atoms, and R¹ is an alkylene group having 2 to 4 carbon atoms,

the isocyanate compound is a radical polymerizable group-containing isocyanate compound, and the polymer is matured at 30 to 170 °C for a period within 72 hours.

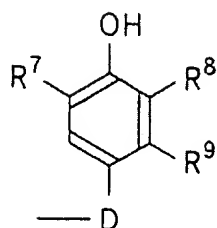
88. (Previously Presented) The production method for a hardenable resin composition according to claim 86, wherein the material polymer is prepared by polymerization of a compound having a double bond-containing group and an acidic functional group with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator, and the material polymer is reacted with the isocyanate compound, using a polymerization inhibitor selected from the group consisting of a phenol-based compound represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



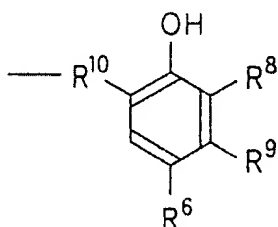
wherein R⁶ is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

Formula (11)



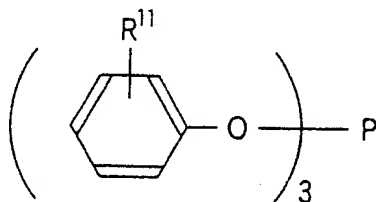
wherein D in the formula (11) is -S-, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R⁷ is hydrogen or an alkyl group having 1 to 10 carbon atoms, R⁸ is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below-mentioned formula (12):

Formula (12)



wherein R¹⁰ in the formula (12) is an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R⁹ is hydrogen or an alkyl group having 1 to 10 carbon atoms, however, at least one of R⁷ and R⁸ is a tert-butyl group, or an alkyl group having a cyclohexyl group, moreover, substituents of the same numeral can either be same or different

Formula (16)



wherein R¹¹ is hydrogen or an alkyl group having 1 to 20 carbon atoms.

89. (Previously Presented) The production method for a hardenable resin composition according to claim 88, wherein a polymer having a light transmittance of a 3-methoxy butyl

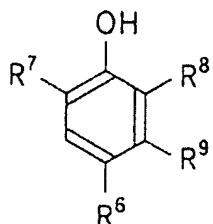
acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 400 nm being 60% or more is prepared by reacting the material polymer with an isocyanate compound, and applying the alcohol treatment to the polymer.

90. (Previously Presented) The production method for a hardenable resin composition according to claim 88, wherein a polymer having a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more is prepared by reacting the material polymer with an isocyanate compound, and applying the alcohol treatment to the polymer.

91. (Cancelled).

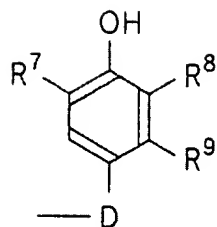
92. (Previously Presented) The production method for a hardenable resin composition according to claim 91, wherein the material polymer is prepared by polymerization of a compound having a double bond-containing group and an acidic functional group with a compound having a double bond-containing group and a hydroxyl group, using a non-nitrile azo-based polymerization initiator or a peroxide-based polymerization initiator, and the material polymer is reacted with the isocyanate compound, using a polymerization inhibitor selected from the group consisting of a phenol-based compound represented by the below-mentioned formula (10) and a phosphite-based compound represented by the below-mentioned formula (16):

Formula (10)



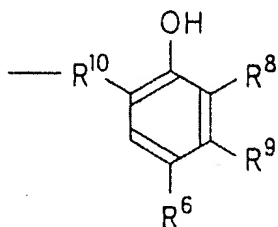
wherein R⁶ is hydrogen, an alkyl group having 1 to 5 carbon atoms, or the below-mentioned formula (11):

Formula (11)



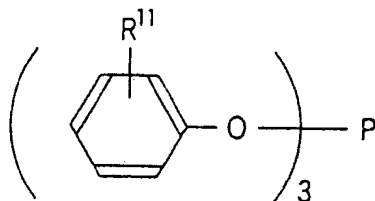
wherein D in the formula (11) is $-S-$, an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^7 is hydrogen or an alkyl group having 1 to 10 carbon atoms, R^8 is hydrogen, an alkyl group having 1 to 10 carbon atoms, or the below-mentioned formula (12):

Formula (12)



wherein R^{10} in the formula (12) is an alkylene group having 1 to 10 carbon atoms or an alkylidene group having 1 to 10 carbon atoms, R^9 is hydrogen or an alkyl group having 1 to 10 carbon atoms, however, at least one of R^7 and R^8 is a tert-butyl group, or an alkyl group having a cyclohexyl group, moreover, substituents of the same numeral can either be same or different,

Formula (16)



wherein R^{11} is hydrogen or an alkyl group having 1 to 20 carbon atoms.

93. (Previously Presented) The production method for a hardenable resin composition according to claim 92, wherein a polymer having a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at

400 nm being 60% or more is prepared by reacting the material polymer with an isocyanate compound, and applying the alcohol treatment to the polymer.

94. (Previously Presented) The production method for a hardenable resin composition according to claim 92, wherein a polymer having a light transmittance of a 3-methoxy butyl acetate solution of a 20% by weight resin solid component placed in a 1 cm square quartz cell at 360 nm being 50% or more is prepared by reacting the material polymer with an isocyanate compound, and applying the alcohol treatment to the polymer.

95-98 (Cancelled).

99. (New) The highly stable polymer according to claim 55, wherein the highly stable polymer contains substantially no acid anhydride group.

100. (New) The highly stable polymer according to claim 55, wherein at least a part of the component unit having an acidic group, the component unit having a hydroxyl group and other component units include in the principal chain contains a benzene ring, and wherein the allowable amount of the acid anhydride is such that the area ratio represented by the acid anhydride group ($1,783$ to $1,822\text{ cm}^{-1}$)/benzene ring (683 to 721 cm^{-1}) is 0.03 or less by the FT-IR spectrum.

101. (New) A hardenable resin composition containing as the essential component a highly stable polymer obtainable by reacting a polymer having a principal chain including at least a component unit having an acidic group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group until an isocyanate group, as measured by an IR absorption spectrum at a peak of $2,200\text{ cm}^{-1}$, is no longer present, and then reacting the same with an alcohol.

102. (New) The hardenable resin composition according to claim 101, containing as the essential component the highly stable polymer obtainable by reacting the alcohol before viscosity rise of a reaction liquid obtained by reacting the isocyanate compound or before completion of viscosity rise of the solution.

103. (New) The hardenable resin composition according to claim 101, wherein the highly stable polymer contains substantially no acid anhydride group.

104. (New) The hardenable resin composition according to claim 102, wherein at least a part of the component unit having an acidic group, the component unit having a hydroxyl group and other component units included in the principal chain of the highly stable polymer contains a benzene ring, and wherein the allowable amount of the acid anhydride group of the highly stable polymer is such that the area ratio represented by the acid anhydride group ($1,783$ to $1,822\text{ cm}^{-1}$)/benzene ring (683 to 721 cm^{-1}) is 0.03 or less by the FT-IR spectrum.

105. (New) A production method for a hardenable resin composition comprising the steps of reacting a polymer having a principal chain including at least a component unit having an acidic group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group until an isocyanate group, as measured by an IR absorption spectrum at a peak of $2,200\text{ cm}^{-1}$, is no longer present to form an intermediate product, preparing a solution by dissolving or dispersing the intermediate product in a solvent, adding an alcohol to the solution before viscosity rise of the solution or before completion of viscosity rise of the solution, and leaving or heating the intermediate product applied with the alcohol treatment for a predetermined time for maturation.

106. (New) A production method for a hardenable resin composition comprising the steps of reacting a polymer having a principal chain including at least a component unit having an acidic group and a component unit having a hydroxyl group with an isocyanate compound having a hardenable reactive group until an isocyanate group, as measured by an IR absorption spectrum at a peak of $2,200\text{ cm}^{-1}$, is no longer present to form an intermediate product, preparing a solution by dissolving or dispersing the intermediate product in a solvent, and reacting with an alcohol having a boiling point with a 75°C or less difference with respect to the boiling point of the coating solvent and/or an evaporation rate with a $90(n\text{-BuOAc}=100)$ or less difference with respect to the evaporation rate of the coating solvent, wherein the alcohol is added before viscosity rise of the solution or before completion of viscosity rise of the solution.